GOING AGAINST THE GRAIN:
THE DEMATURITY OF THE EUROPEAN TEXTILE INDUSTRY

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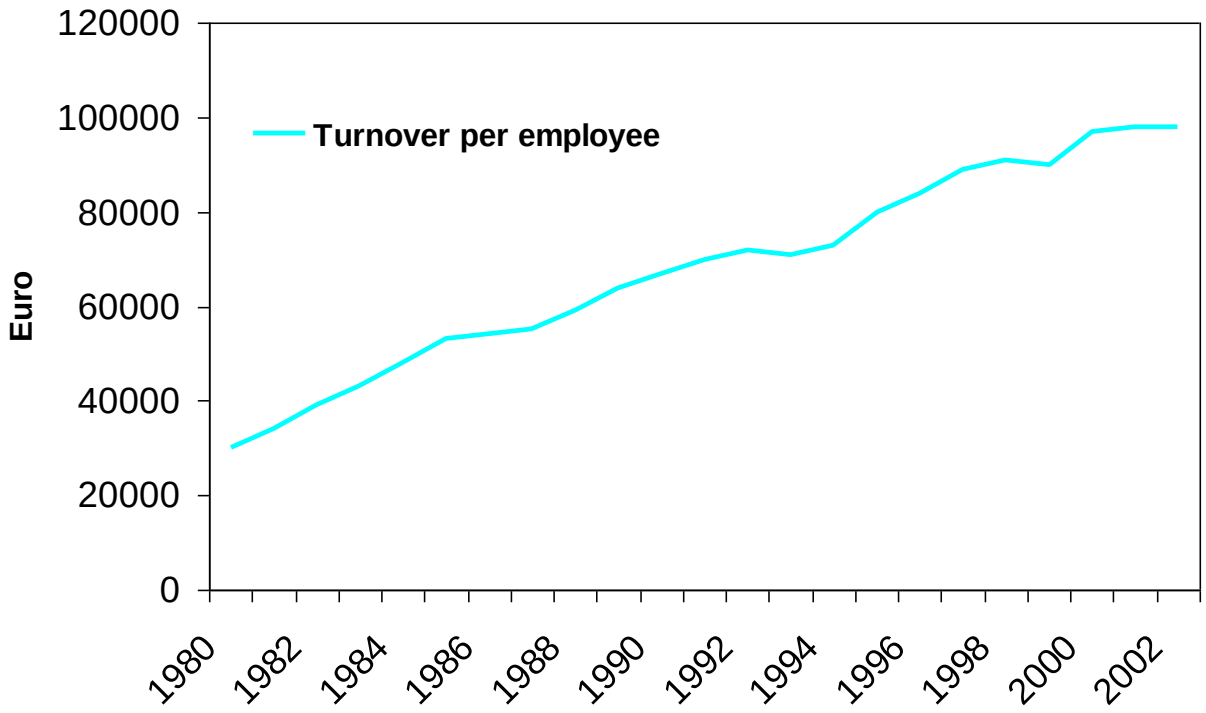
BACKGROUND

MULTI FIBRE AGREMENTS (MFAs)

- The European textile industry has been the object of industrial transformation since the 1970's under MFA
  - Protection
  - Restructuring and modernisation

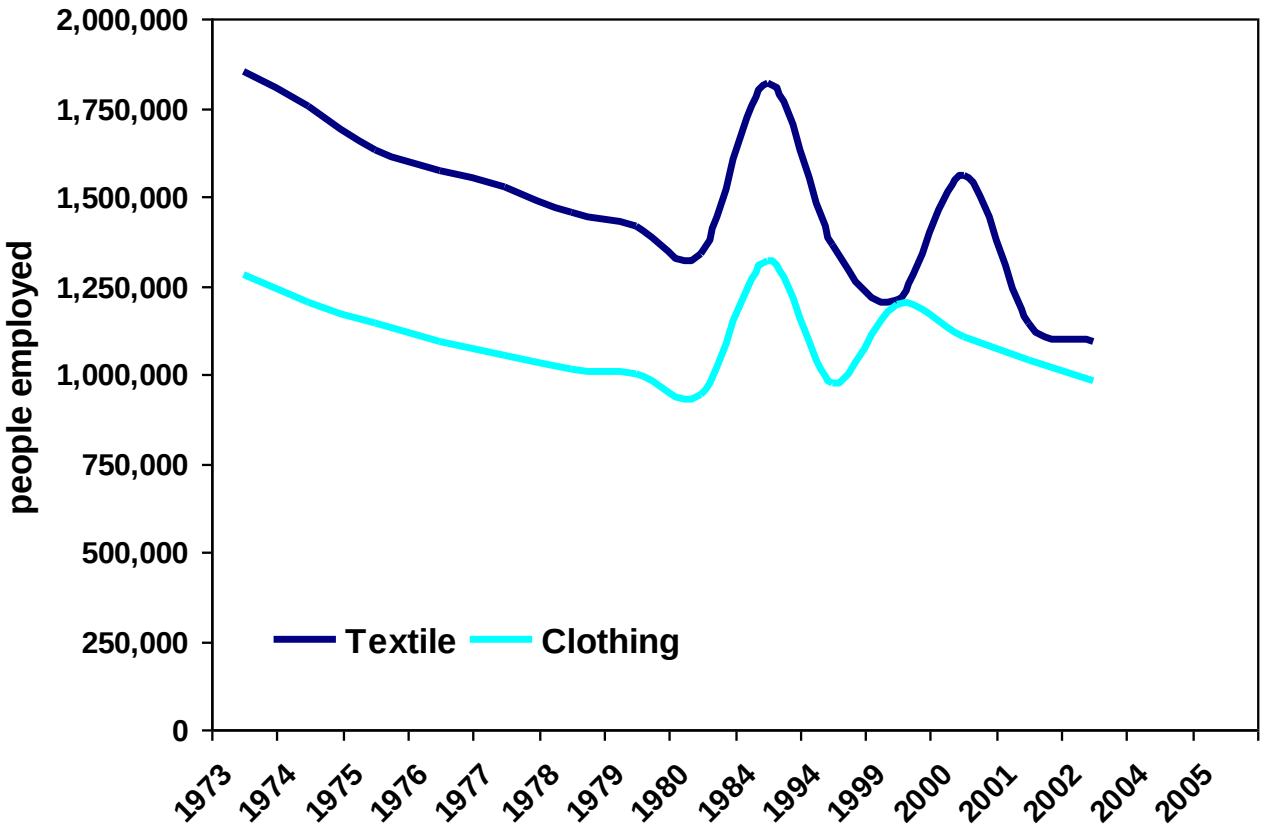
- **Result**:
  - Improvement of productivity
  - Continuous decline of employment
  - Declining market

Productivity



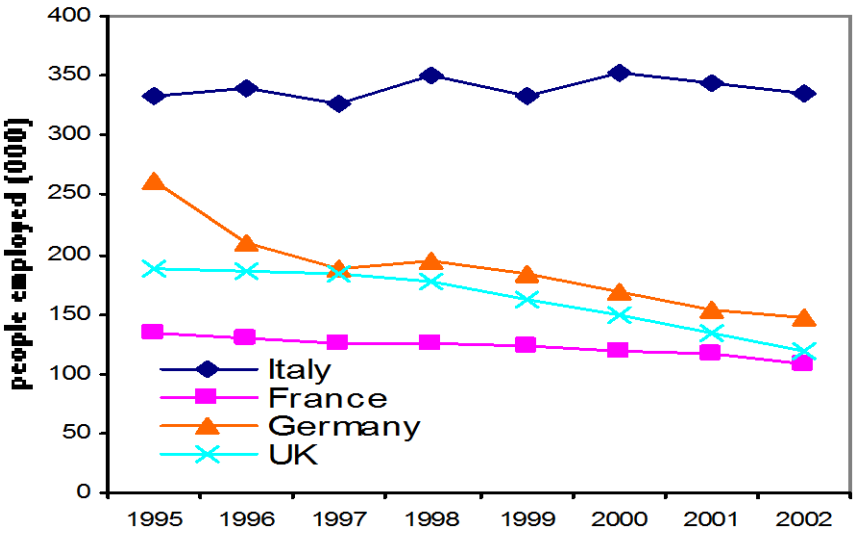
1980-1994: EU-12 (1980-85: reconstructed data for Greece, Spain and Portugal),
1995-2003: EU-15 (Source: Euratex, 2004)

Employment

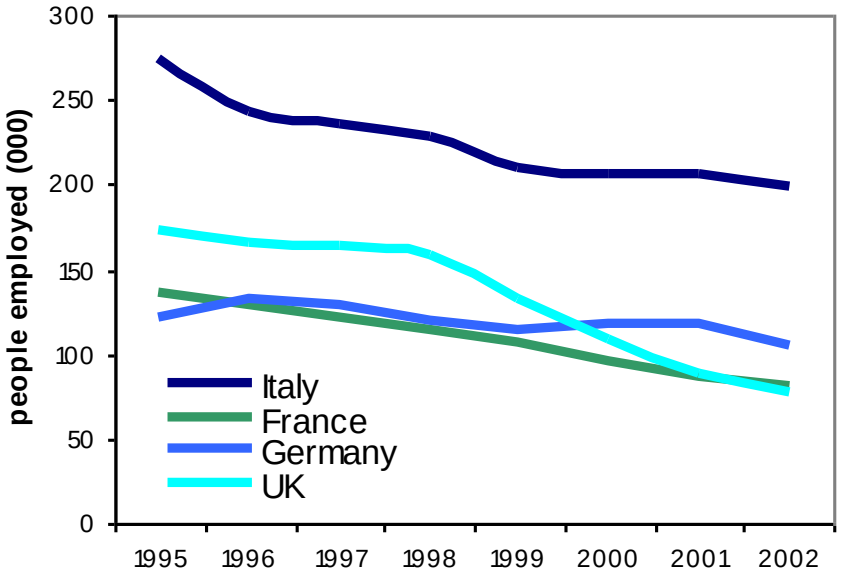

2,000,000
1,750,000
1,500,000
1,250,000
1,000,000
750,000
500,000
250,000
0
people employed
Textile
Clothing
1973
1974
1975
1976
1977
1978
1979
1980
1984
1994
1999
2000
2001
2002
2004
2005

Employment

Textiles



Clothing

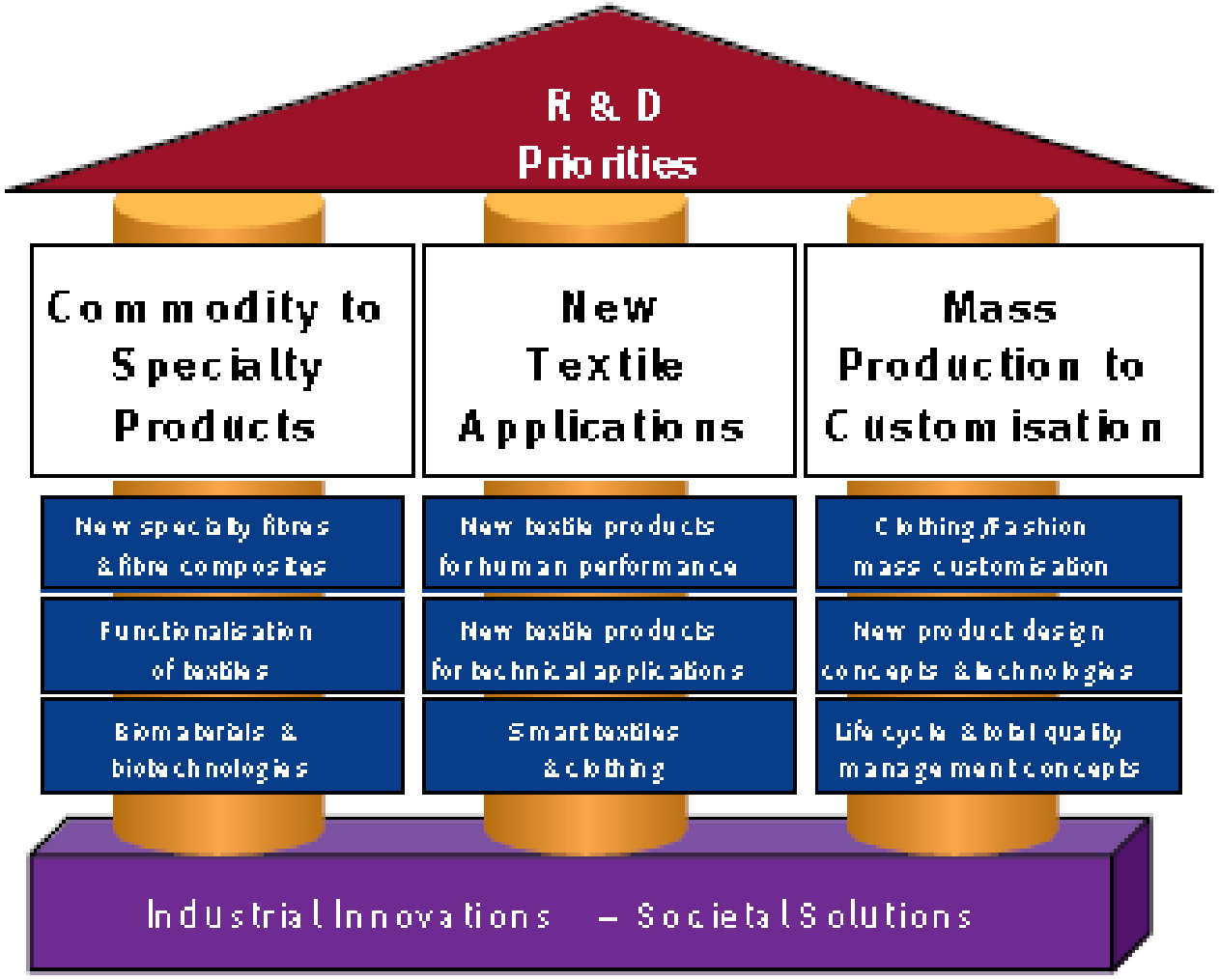


POST MFAs

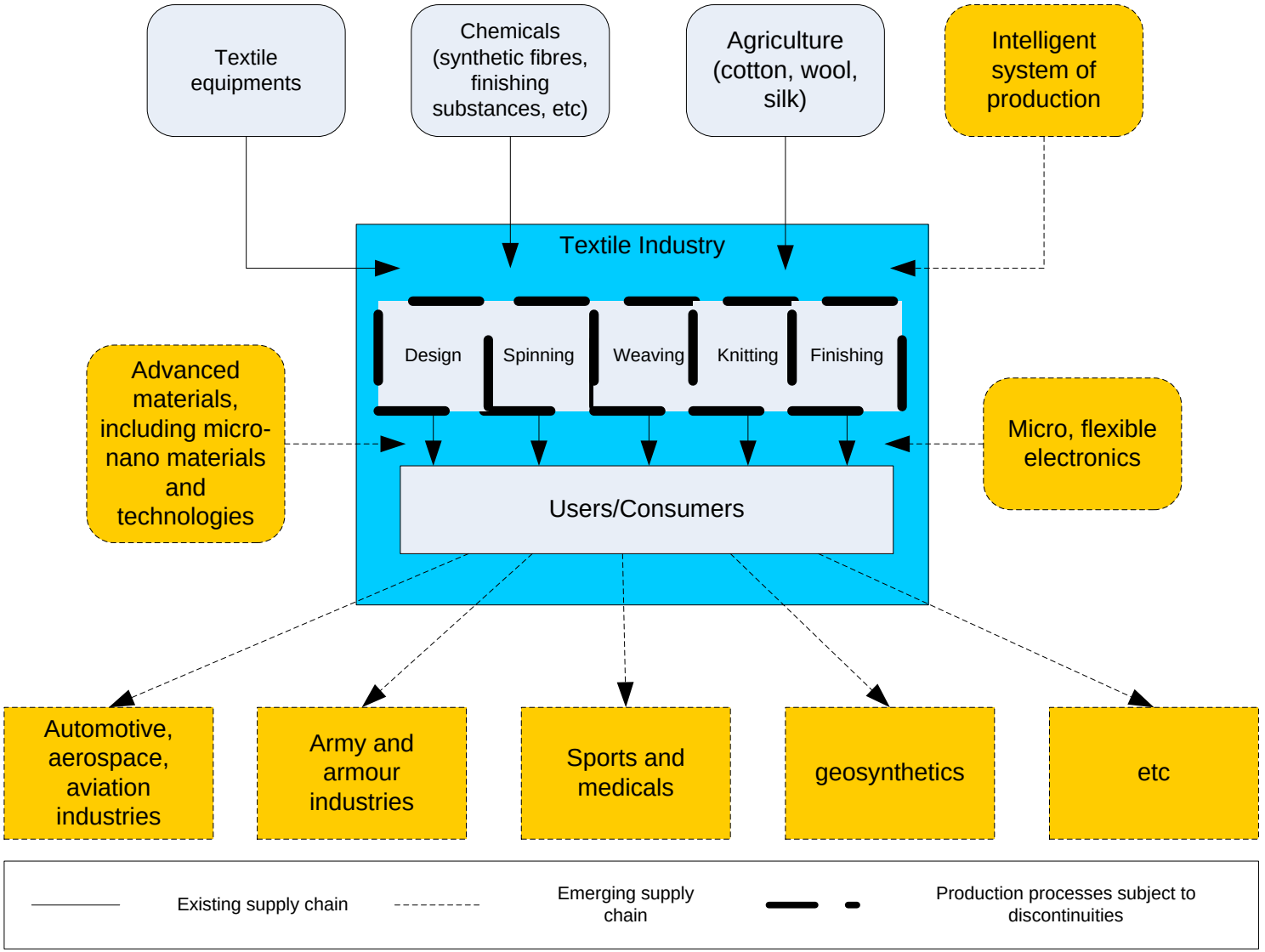
- Abolishment of MFA (1 January 2005)

- European Technology Platform for the Future of Textiles and Clothing (2004)
  - Radical technological innovation
  - Improve long-term competitiveness of the sector
  - to reinforce the position of Europe as a leading global player

Technology Platform



Industrial Reconfiguration



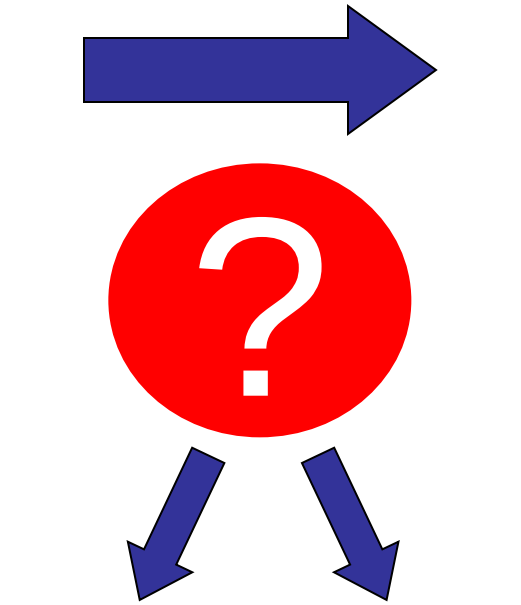
Potential Problems

- An old industry with deeply-embedded routines
- Unfavourable structure
  - 95% are SMEs with limited research capacity
- Supplier-led innovation sector (Pavitt, 1984)
- Require paradigm change
  - technologies, production processes, understanding market demand, distribution systems, organisations and management
- Growing competition from LDCs even for advanced products
- Rising complexity of process and product innovations

RESEARCH QUESTION

Mature Phase

- Standardized products, production ystems, technologies, organisational routines
- Mass markets
- Declining market due to intense competition
- Cost-based competition
- Largely involve process innovations
- Centralised organisation



Ferment Phase

- Customised products
- Under-developed production systems and organisational routines
- Employing emerging technologies
- Niche and emerging markets
- Performance/functional-based competition
- Largely involve production innovations
- Decentrelised organisation

THEORETICAL FRAMEWORK

Industrial Maturity-Dematurity Framework Abernathy et al (1978, 1983)

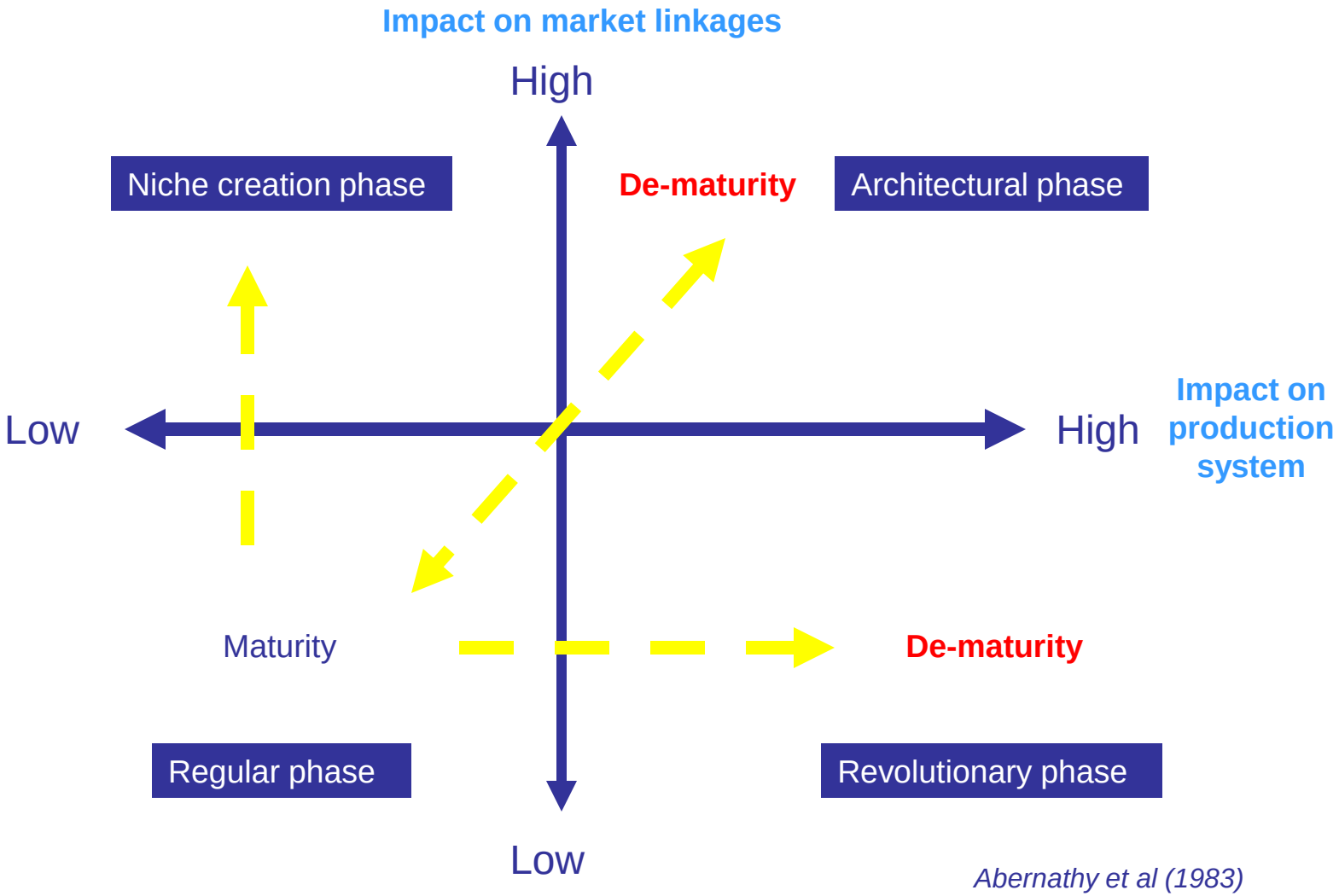
- Maturity is inevitable in the process of industrial evolution

- Key aspects of the ‘maturity trap’ are:
  - cost reduction
  - economies of scale
  - Static or declining market share
  - standardization

Maturity-Dematurity Framework

- Maturity can be arrested and, for some circumstances, reversed (de-maturity).
- De-maturity has to be pioneered by *" innovations that change an industry's basis of competition at the same time that it disrupts established production competence, marketing and distribution systems, capital equipment, organisational structures and the skills of both managers and workers"* (Abernathy et al, 1983, p. 109).
- The search for new concepts typically works its way back up through the same design hierarchy established by the *evolution towards maturity* which preceded it.

Evolution of Technology Transilience



Abernathy et al (1983)

Dynamic Capabilities Framework

by Teece et al. (1994, 1997); Teece (1986, 2007)

- An attempt to unveil the foundations of **long-run enterprise success** in rapid environmental change

- The firm's ability to build, integrate and reconfigure internal and external assets to address rapidly changing environments

- **DC origins**:
  - Routinized behaviour (*e.g.* NPD, TQC)
  - Creative and differentiated entrepreneurial acts
    Sensing and seizing opportunities through asset and capacity reconfiguration

Dynamic Capabilities Framework

- Dynamic capability defines the course of evolution of a firm as a consequence of chosen *long-term competence development trajectory*
- Firm's *asset positions determine its competitive advantage* at any point in time and its *evolutionary path constrains the types of industrial activities* in which a firm can be competitive
- *Organizational processes* transform the *capabilities* of the firm over time.

Framework Discussion

- **Abernathy *et al.*** (**1978**, **1983**)
  - Built on the evolution of technology and market at industry level

- **Teece** (**1986**, **2007**) **and Teece *et al.*** (**1994, 1997**)
  - A firm level study built on evolutionary and behavioural economics combined with creative and differentiated entrepreneurial acts

- **Hypotheses**
  - De-maturity at firm level is a result of well-executed, well-organised dynamic capabilities
  - Maturity-trap is a consequence of under-developed dynamic capabilities

METHODOLOGY

Approach

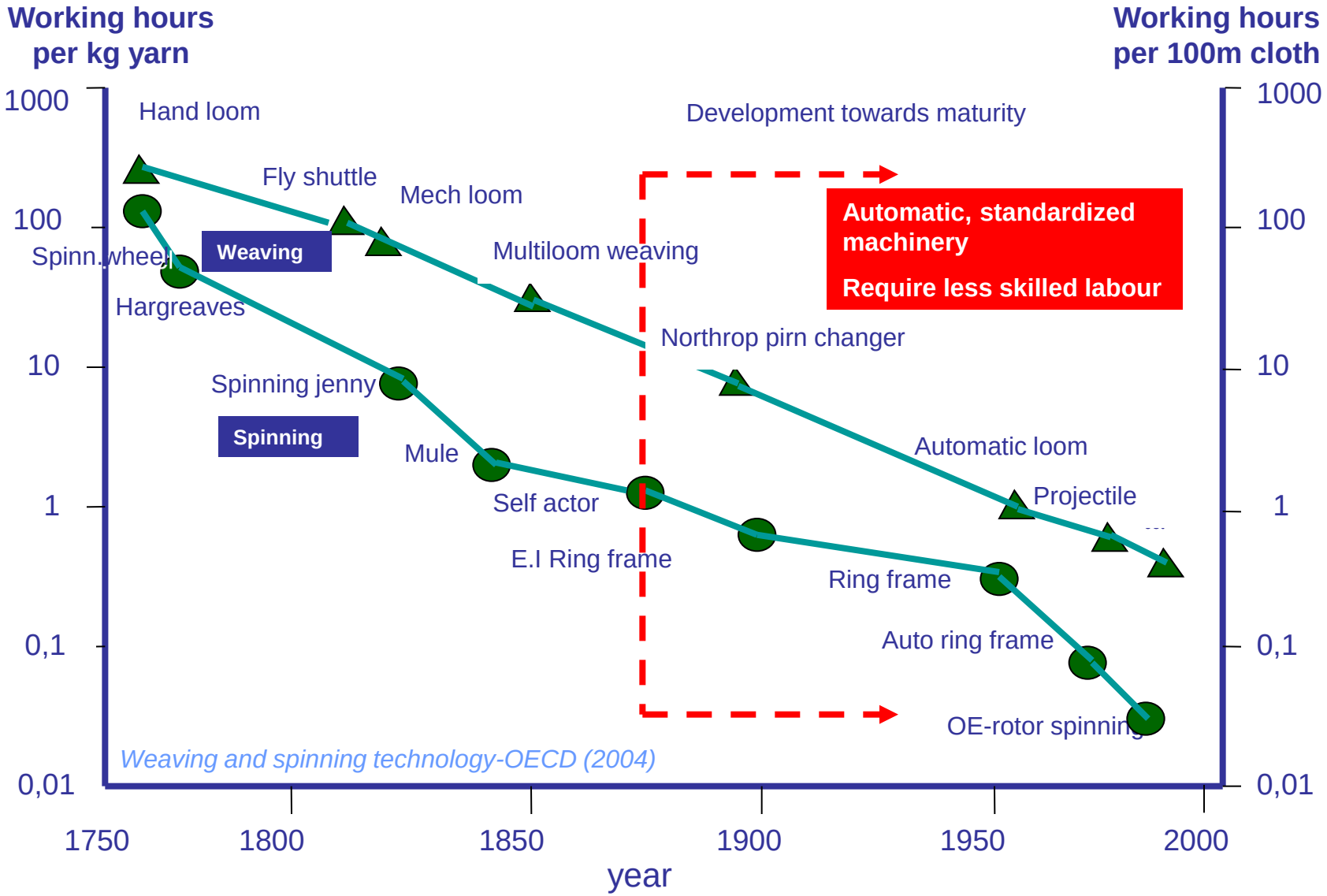
- **In-depth**, **longitudinal study** to investigate the phenomena of maturity, de-maturity and maturity- trap in the textile industry in Europe
- **Multiple cases study**
- To address “how” question:
  - Firm level study
  - Long-lived firms (over 125 years)
- To address “factor” question:
  - Firm-specific and country-specific
- **Comparative analysis**

Case Study

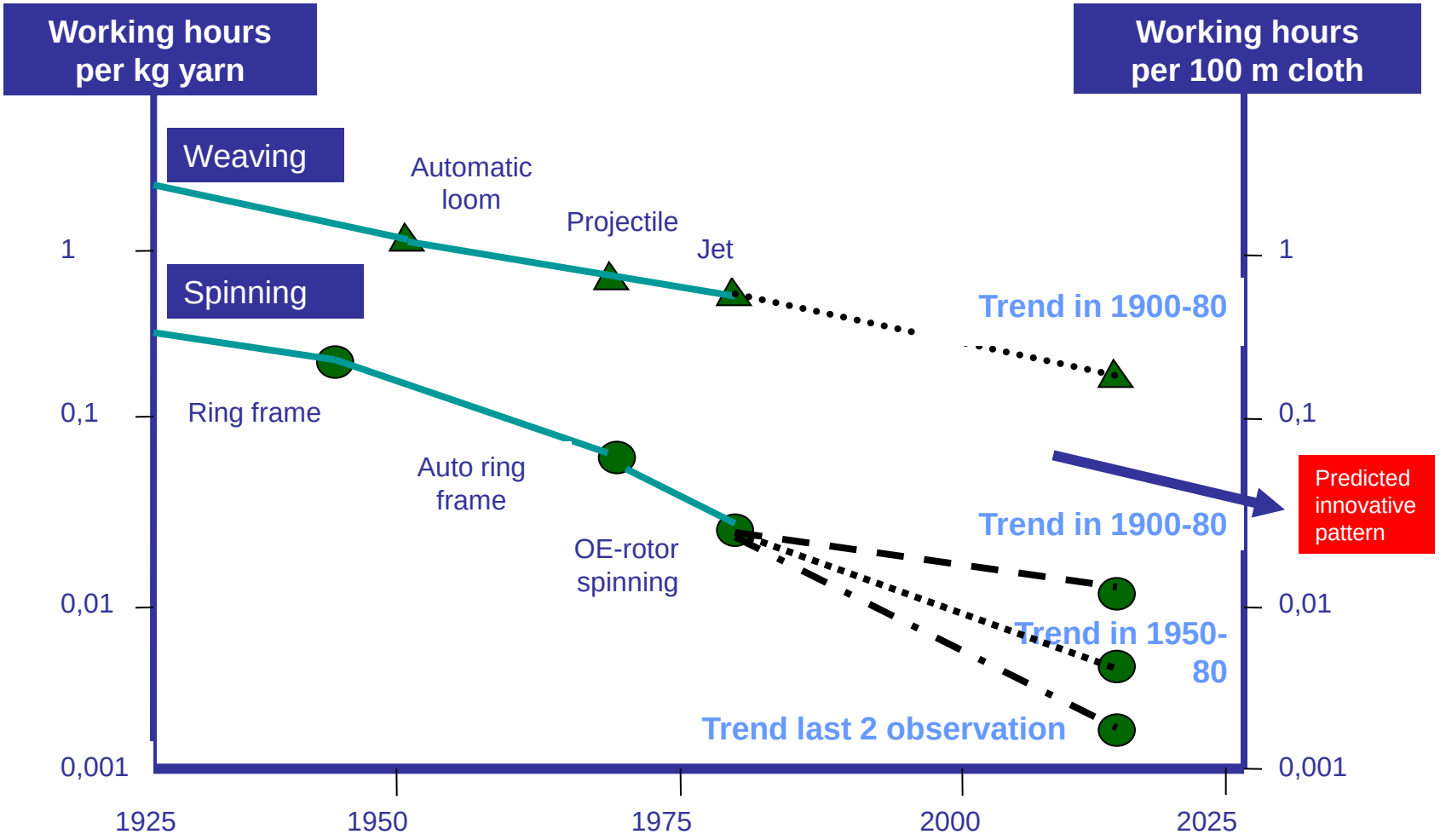
- Italy – Marzotto, S.p.A
- The Netherlands – Ten Cate, NV
- Germany – Freudenberg Group
- UK – Hainsworth, Ltd.

TECHNICAL EVOLUTION

Process technology

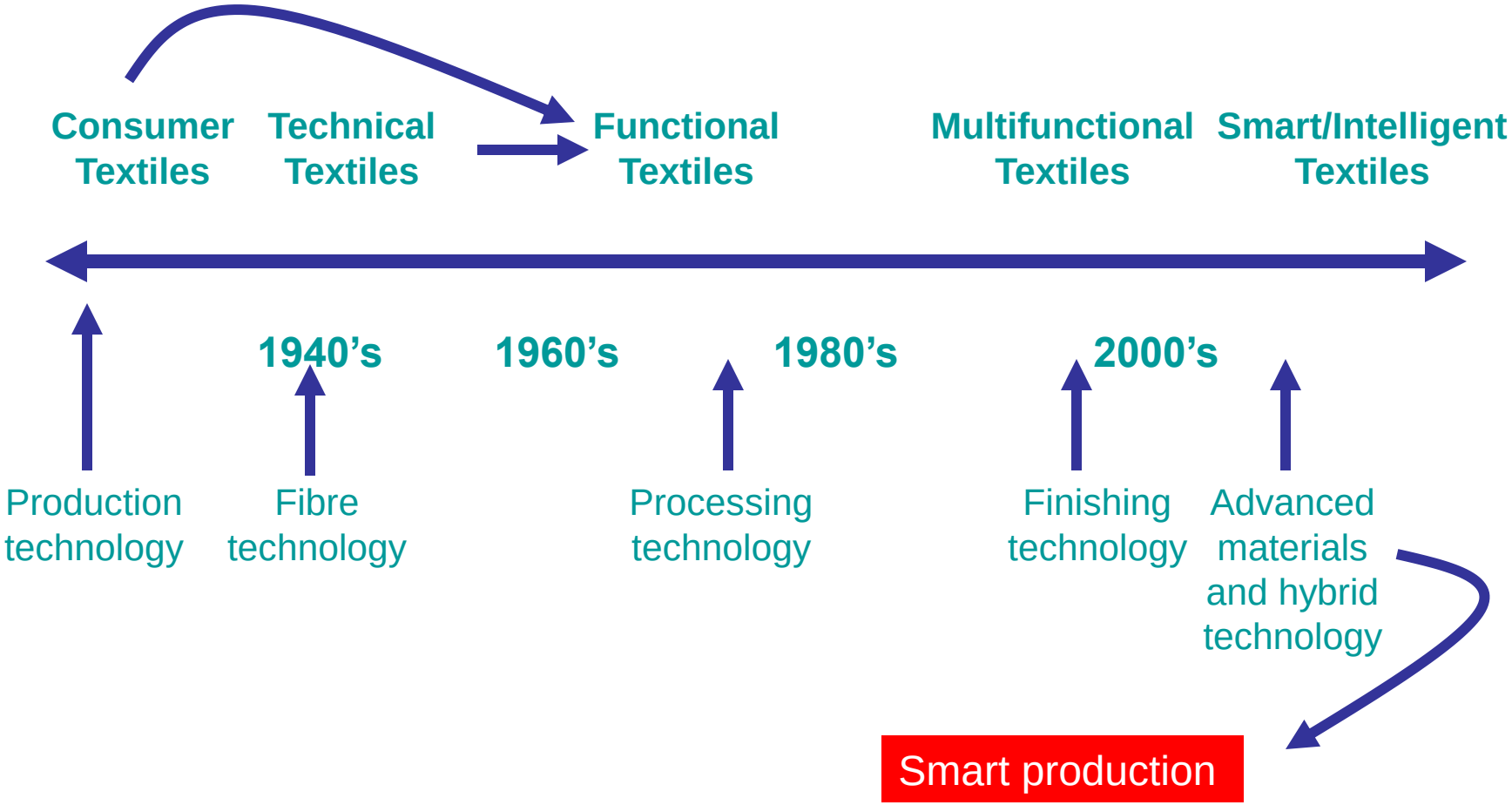


Process technology



Weaving and spinning technology-future trend (OECD, 2004)

Product Technology



THE EVOLUTION OF THE EU TEXTILE INDUSTRY

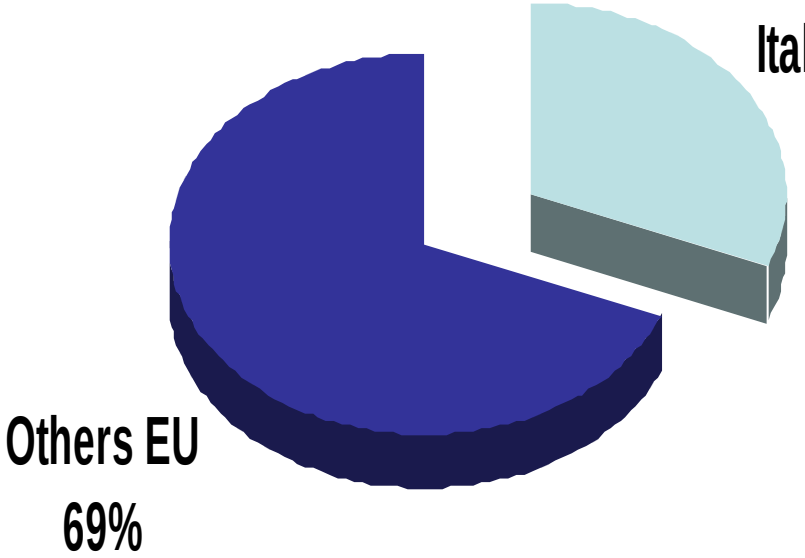
- Each country appears to follow unique pattern of industrial evolution

- Therefore, the evolution is examined on country basis

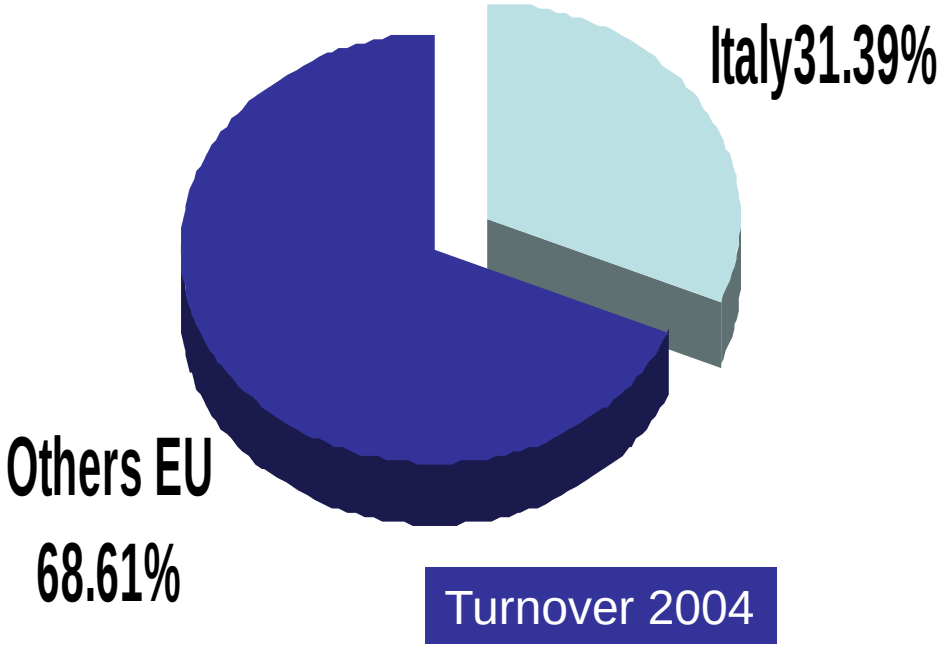
CASE STUDY 1:

ITALY and MARZOTTO, S.p.A

Statistics



Employment 2004

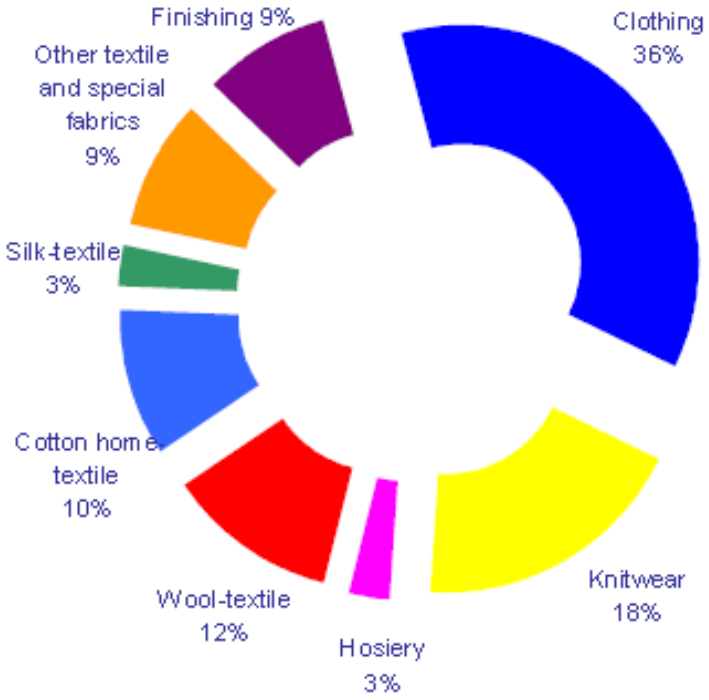


Turnover 2004

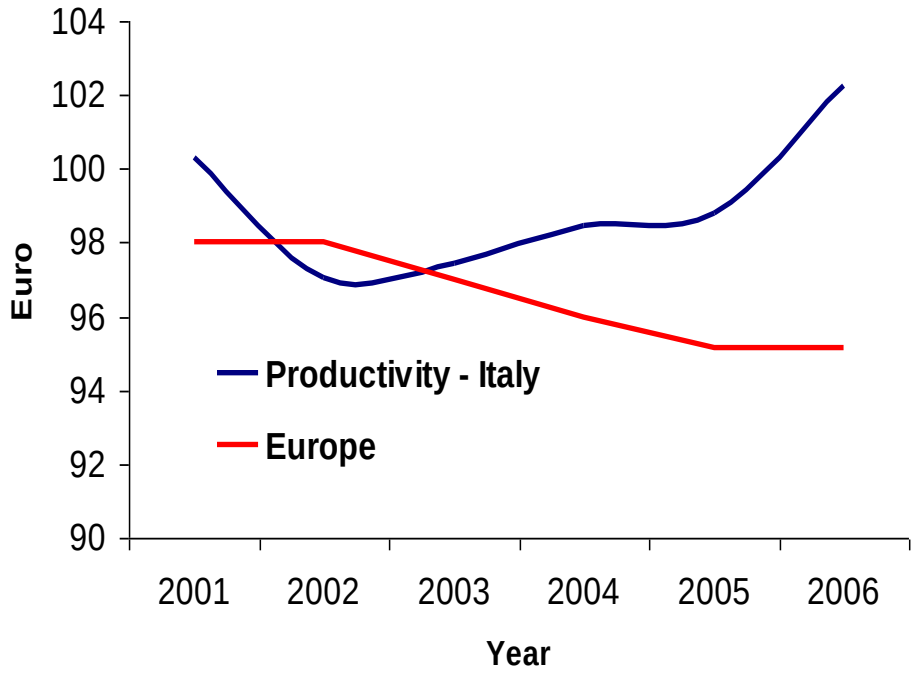
Statistics

Sistema Moda Italia

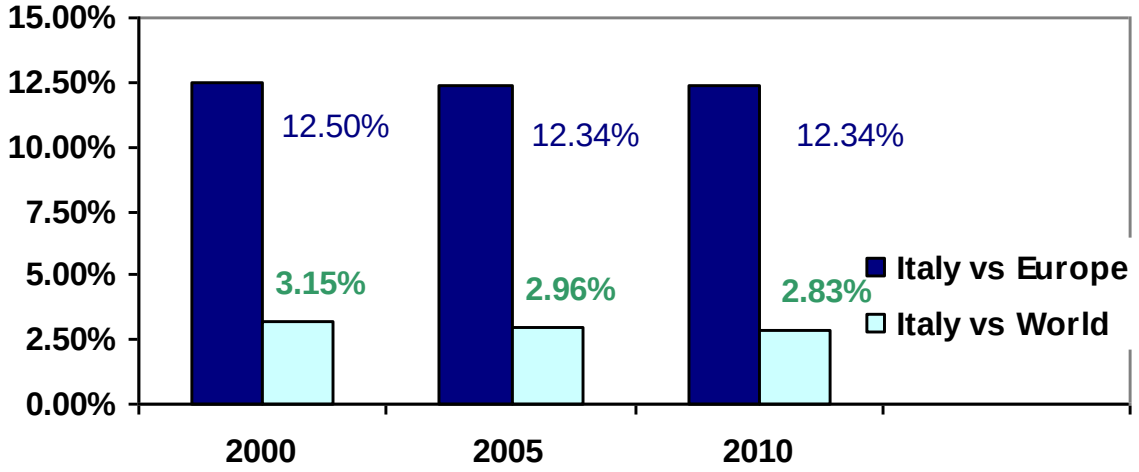
Statistics

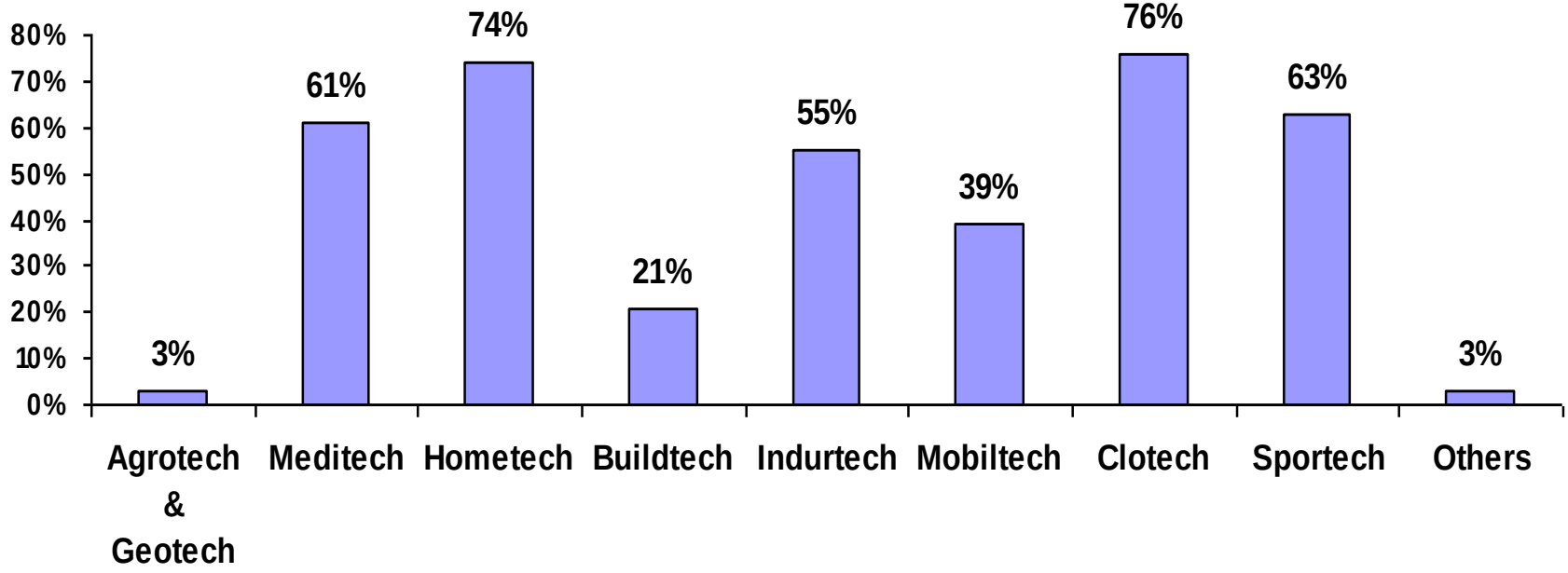


% of turnover 2006



Statistics: Technical Textiles





Innovative Characters

- Traditionally weak in R&D, high-tech industries including the chemical industry
- R&D is not the main source of innovation in the textile industry but the *purchase of machinery, **design**, and customer needs*
- Local/national equipment suppliers as the source of innovation
- Competitiveness lies on its disintegrated structure, cooperate in networked clusters, *mainly locally situated*, to form flexible specialised firms

Evolution towards maturity

Maturity

Year	1900's-1920's	1930's-1940's	1950's – 1960's	1970's – 1980's	1990's – 2000's
Trend in the Italian textile industry	Adopt ring frame faster than other European countries		•The height of synthetic fibre production •Adopt mass-production technique imported from the US as a part of Marshall Plan •A leapt on productivity	•Inflation due to a sharp increase of oil price and labour costs •Reach the highest productivity in Europe but cause over capacity •Extensive restructuring following MFAs	•A further increase in wages •Continuous decline of production, employment, and turnover •Abolishment of MFA
Market Change	Growing market as a result of unification of Italy (1860)	•Local couturiers began to gain market as French and English couture were unavailable during the war •Begin international market expansion	•Export textiles to the US •The beginning of Italian luxury fashion industry sponsored by large textile firms	•The rise of Italian luxury fashion •Market expansion for ready to wear to the US	•Crisis hits due to MFA & competition from the emerging countries •Expansion to emerging markets (India, China, Russia) •Fast fashion
Competitive Change			The beginning of competitive crises due to raising labour costs, obsolete plants and competition from the Far East	A wave of merger and acquisition	•A wave of merger and acquisition in the luxury fashion industry •Relocation to North African and Eastern Europe
Structural Change	Increasing number of vertically integrated firms	A few large firms emerge as a result of mergers and acquisition	•Disintegration of structure •Declining employment	•Forward integration to clothing manufacturing •Declining employment	•A decline in number of firms and employment •A shift in power towards buyers •An increase in concentration

Maturity-trap

- Transient economic misfortune
  - Problems can be solved by re-enforcing the existing basis of competition i.e. speed of production and flexibility
- Did not see the decline as a consequence of permanent changes in demand, technology and competition
- The label “Made in Italy” will remain the industry’s unique competitiveness despite growing production relocation and OPT

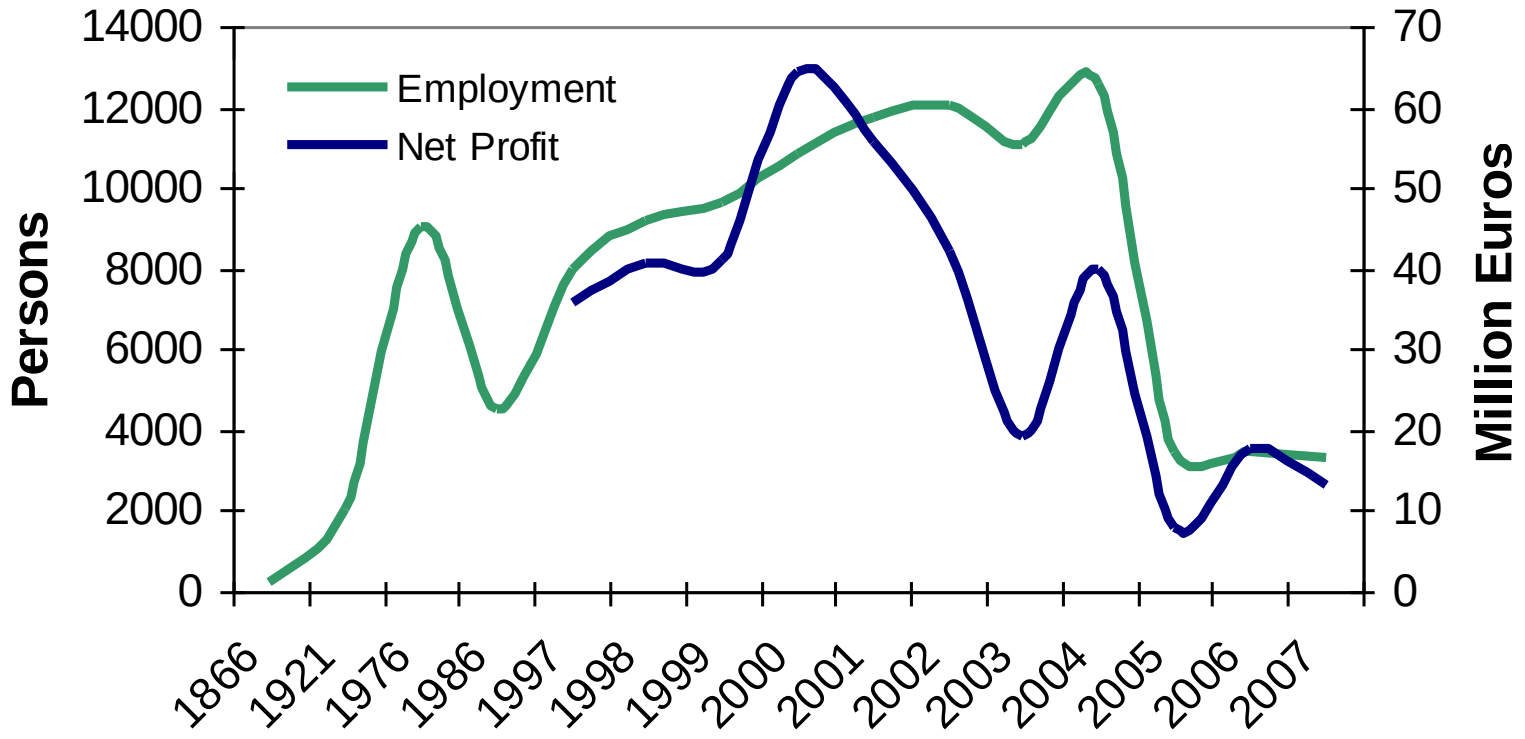
Maturity-trap

- Local search & local preferences
  - Business diversification to clothing and fashion brands
  - Favour local textile equipment makers as the main source of innovation
    - → Deter participation in global innovation networks
- Favour process innovation than product innovation
- Less developed technical textile markets among other textile industry in Europe

MARZOTTO, S.p.A

- The largest textile manufacturer in Italy
- Founded in 1836 in Valdagno, Veneto region as a wool yarn and fabric manufacturer
- Expanded the business to flax and linen and yarns fabrics through acquisition in the 1980’s
- Integrated forward to clothing and luxury brands in the 1980’s and 1990’s
- Demerged clothing business in 2005, and subsequently concentrate on yarn and textile manufacturing

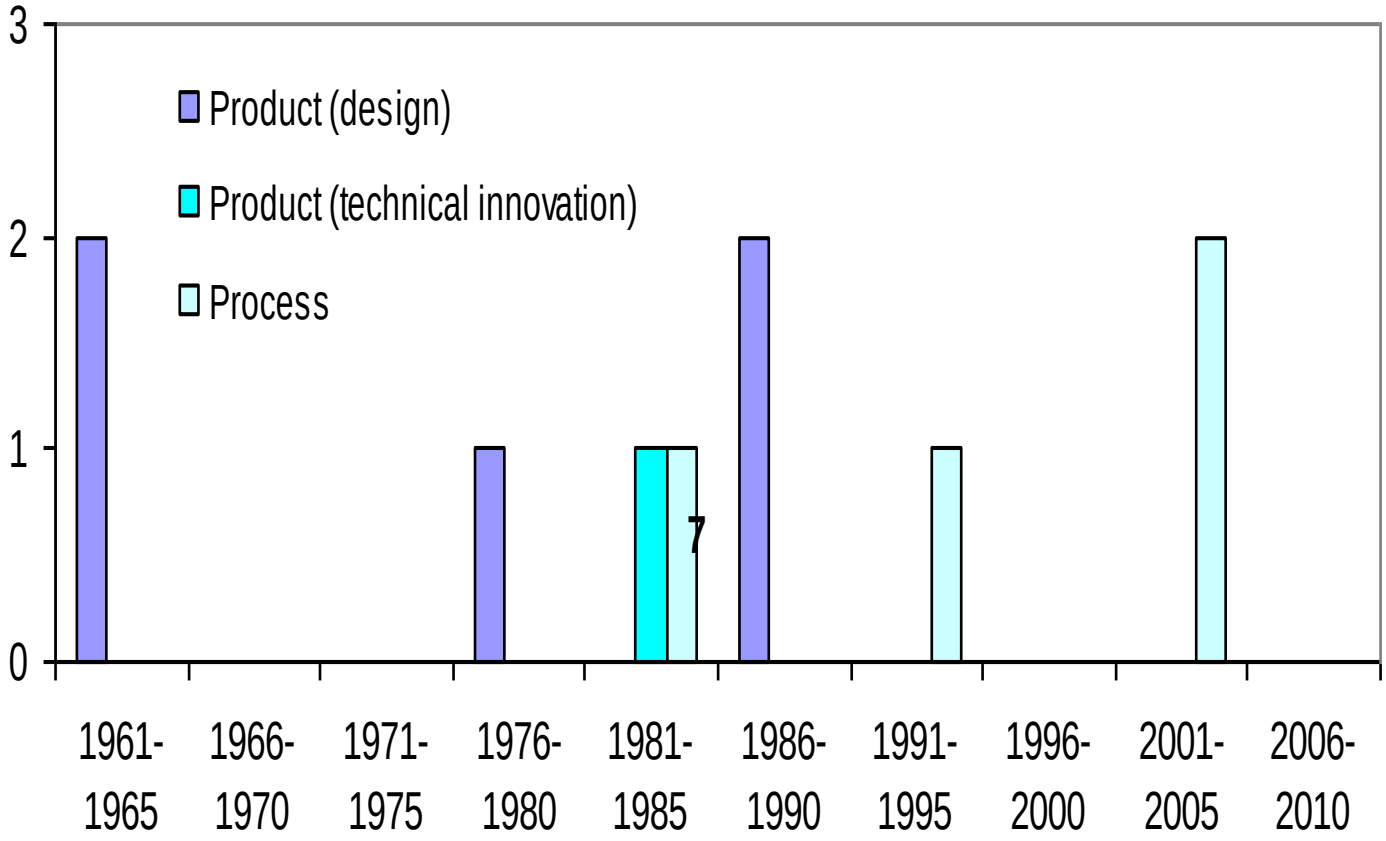
Performance



Innovativeness

- Amongst the first companies to adopt mass production technique in the 1950's in Italy
- The first textile firm in Italy that adopted "made in Italy" computer, ELFA 9003
- Amongst the first textile firms that integrated forward to clothing sector
- Early adopter of the latest spinning and weaving technology
- Relatively inactive in the EU research programmes

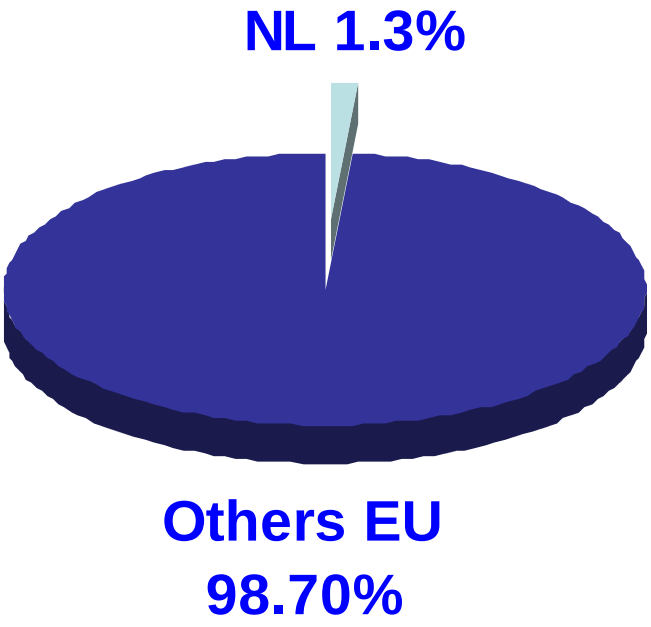
Patent


3
2
1
0
Product (design)
Product (technical innovation)
Process
7
1961-1965
1966-1970
1971-1975
1976-1980
1981-1985
1986-1990
1991-1995
1996-2000
2001-2005
2006-2010

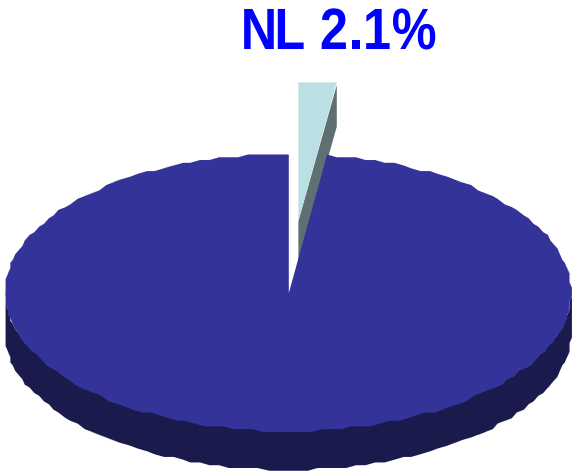
CASE STUDY 2:

THE NETHERLANDS / TEN CATE, NV

Statistics

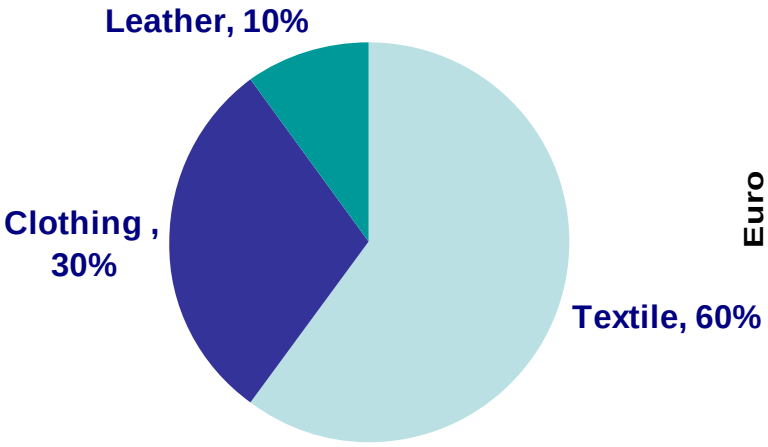


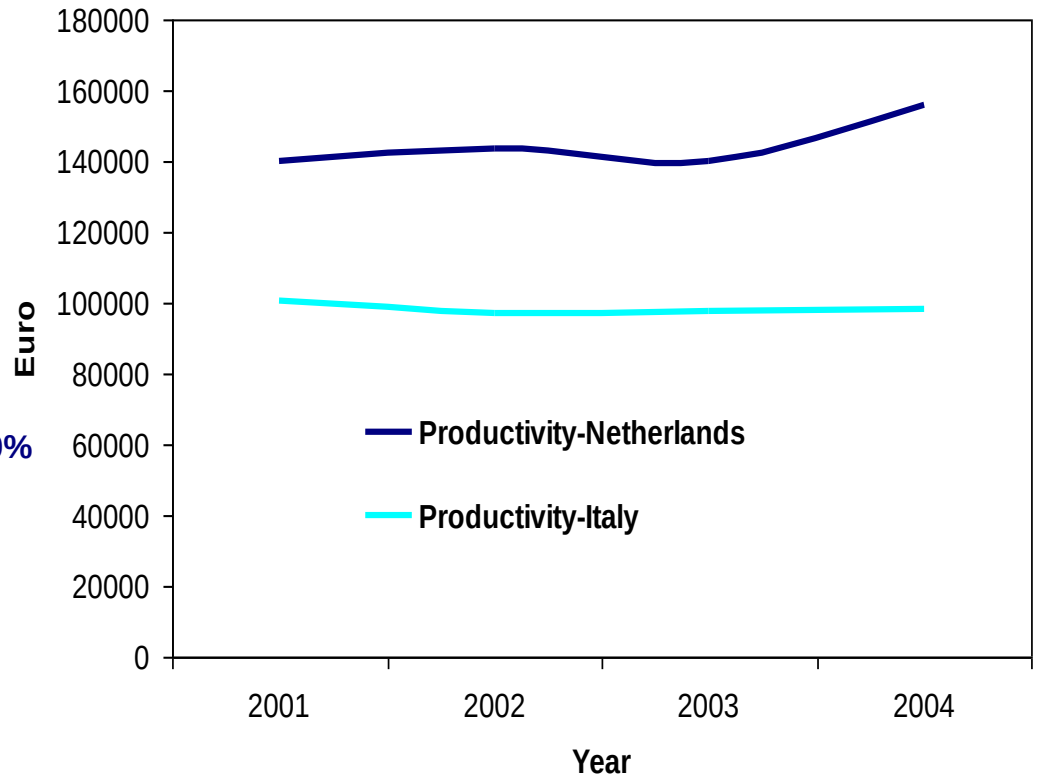
Employment 2004



Turnover 2004

Statistics

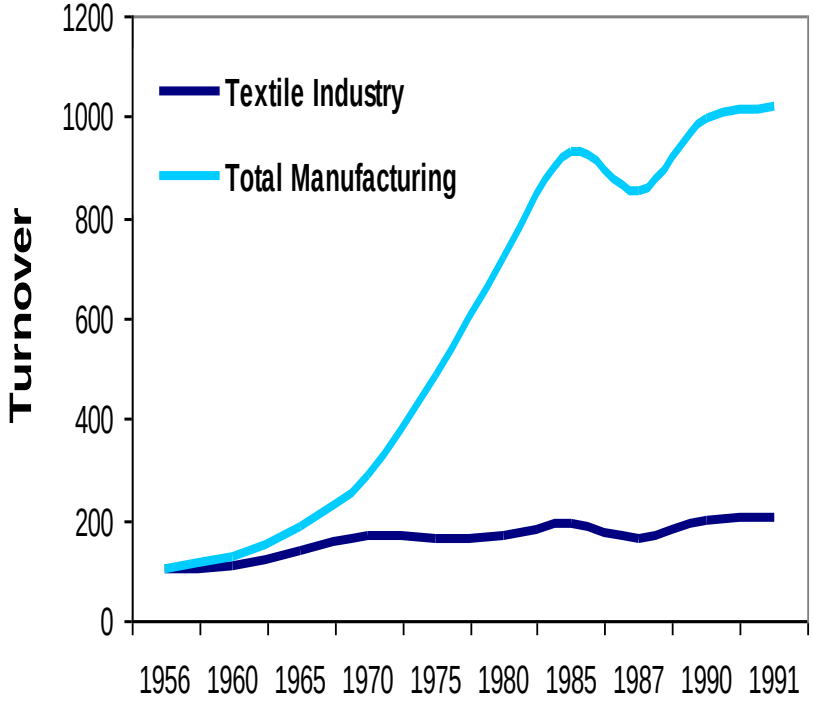

Leather, 10%
Clothing , 30%
Textile, 60%

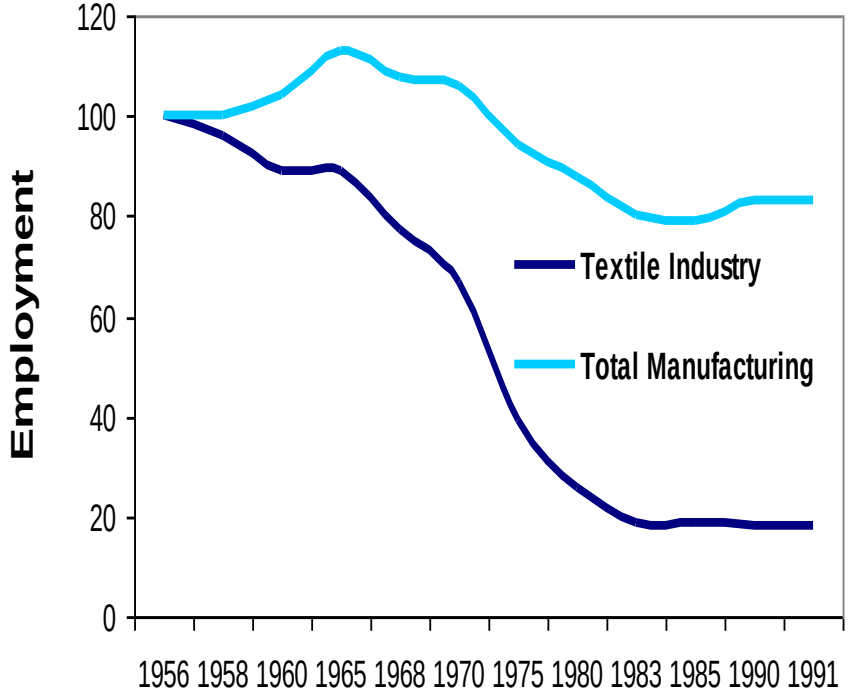

180000
160000
140000
120000
100000
80000
60000
40000
20000
0
Euro
Productivity-Netherlands
Productivity-Italy
2001
2002
2003
2004
Year

Innovative Characters

- Open for international collaboration
- Opposition (together with Germany and Denmark) to the EU industrial protection policy
- Concentrated R&D expenditure (DSM, Akzo-Nobel, Philips, Shell, Unilever)
- The textile industry contributes 0.34 percent of total industry R&D expenditure
- Chemical and equipment industries are the major source of information concerning innovation trends
- Textile contributes 60% of the industry population with technical textile producers being the most innovative ones.

Evolution towards maturity





Evolution towards maturity

maturity

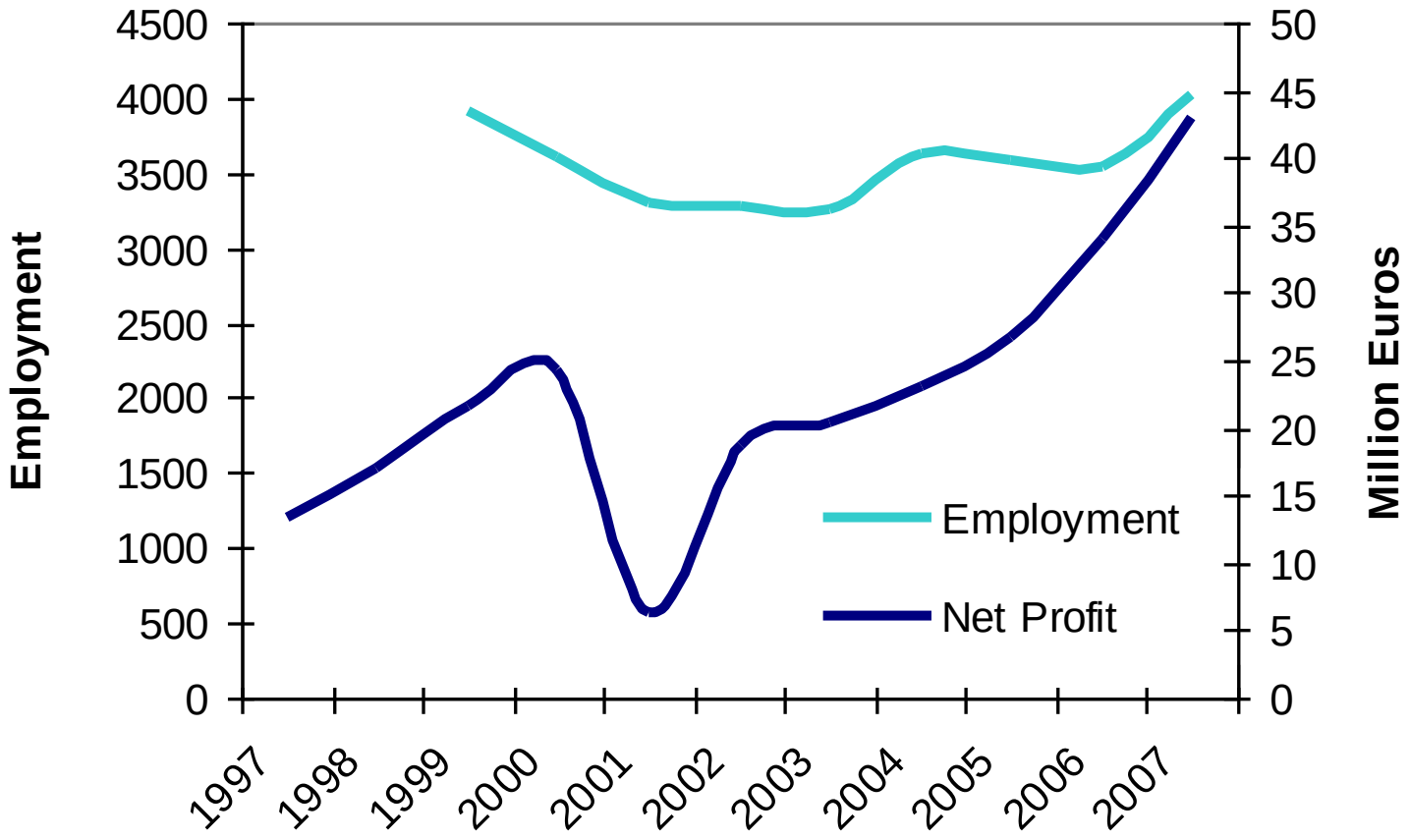
Dematurity?

Year	1900's-1920's	1930's-1940's	1950's – 1960's	1970's – 1980's	1990's – 2000's
Trend in the Italian textile industry	Preferential market agreement with the East Indies (Indonesia) was terminated in 1870.		•Increased labour costs •Early rapid decline	•Rapid decline continues •Extensive restructuring following MFAs	•Economic slow down 2001-2003 •MFA is abolished in 2005
Market Change	Losing market protectionism in the Dutch colony of East Indies	•Severe decline in Indonesian market share •Growing domestic and international markets	•Losing colonial markets •A number of companies begin to shift to interior textiles and consumer technical textiles	•Growing market in technical textiles	•Exploitation of high added value technical textiles
Competitive Change	Begin to compete with Japan over markets in Indonesia	Intensified competition with Japan and Britain over Indonesian markets	•Begin a rapid decline due to uncompetitive labour costs •Production relocation to Belgium for low-mid segments •A wave of merger and acquisition	•Relocation to North America and Eastern Europe •Production relocation for high segment markets •Merger and acquisition continues	•Clothing production largely disappears
Structural Change			•Increased concentration, the most concentrated in Europe up to 1980 •Decreased employment and increased labour costs	Company closures	•Textile companies dominate the industry (60%) •Bipolarity of structure •Agglomeration of retailers

Ten Cate, NV

- One of the largest textile manufacturers in the country
- H. Ten Cate Hzn & Co was established as a linen merchant in 1704 in Almelo, Twente region
- Export to the Dutch colonies was the primary markets
- It has undergone two major transitions which transform the company from a linen to a high tech textile manufacturer for technical uses
- The third transition is underway which may disrupt the existing production competence and markets

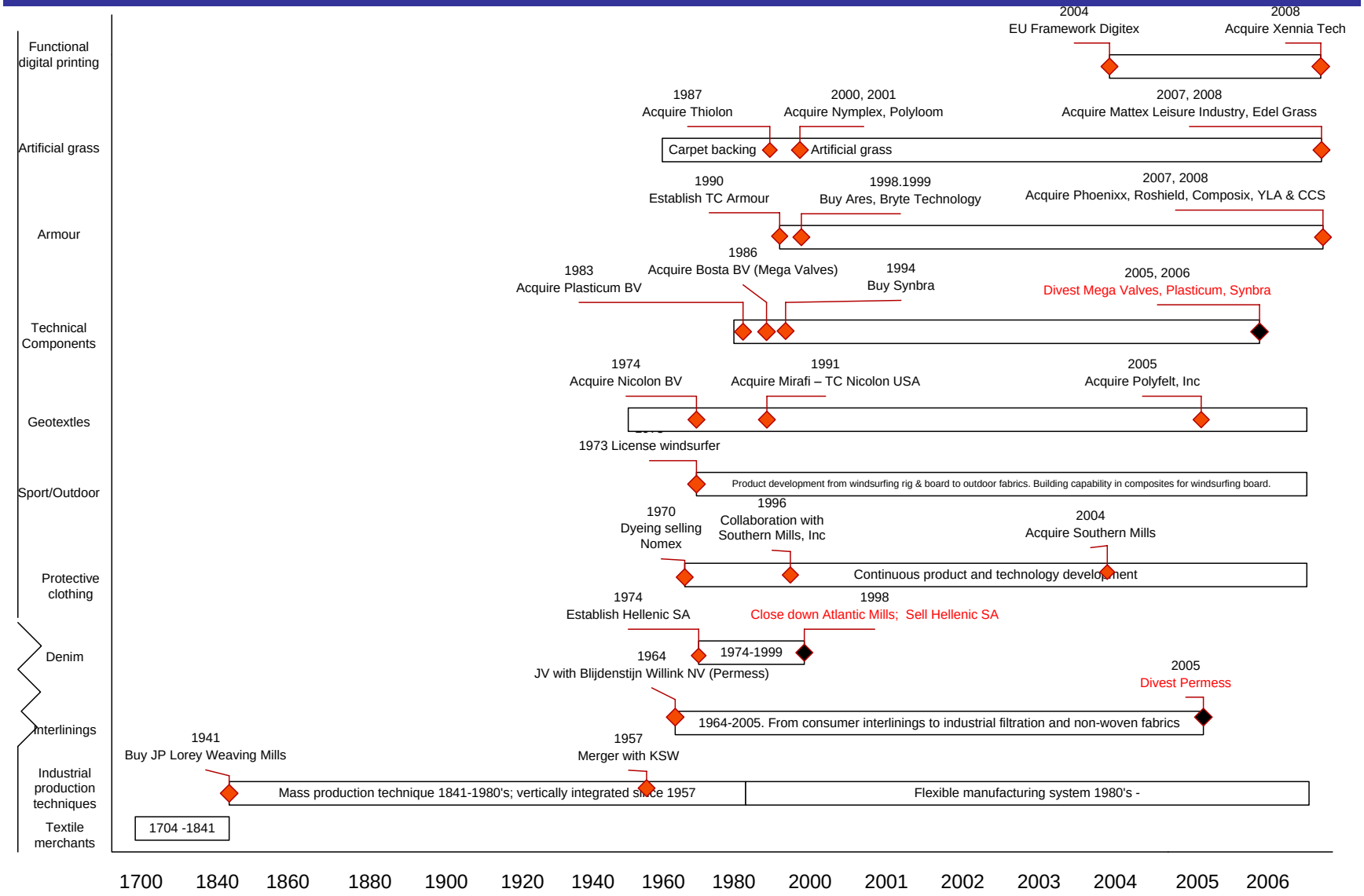
Performance



Innovativeness

- Performing distant search
- Setting industrial trend to shift to higher added value textiles
- Performing path breaking change & continuous strategic alignment involving:
  - emerging technologies and markets,
  - a combination of internal and external assets to exploit opportunities
- Active in the EU R&D programmes
- Engage with university research centres
- Fundamentally entrepreneurial by which it shapes business ecosystems

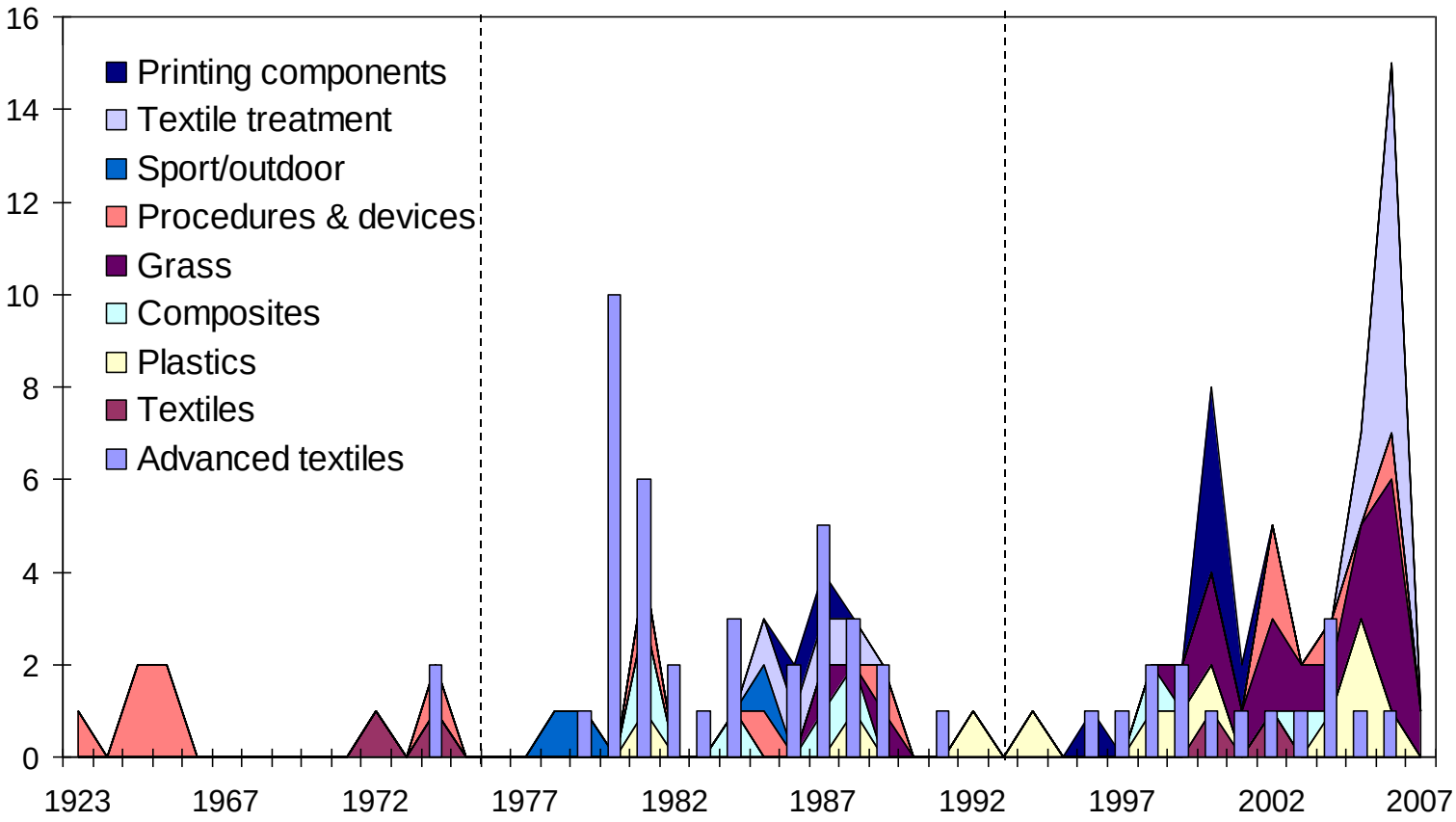
Technology & market transition



Path breaking change and continuous alignment

- Opportunity identification in emerging markets
- Rapid learning process
  - Technology, market, distribution system, consumers
  - Recombination of assets/factors of production
- Development
  - Internal development
  - Actively engage with national, regional and EU research programmes
  - Acquisition to complement or reinforce internal technical capability/capacity
- Establishment
  - Market expansion and product/technology refinement
- Divestment
  - Declining businesses

Patent

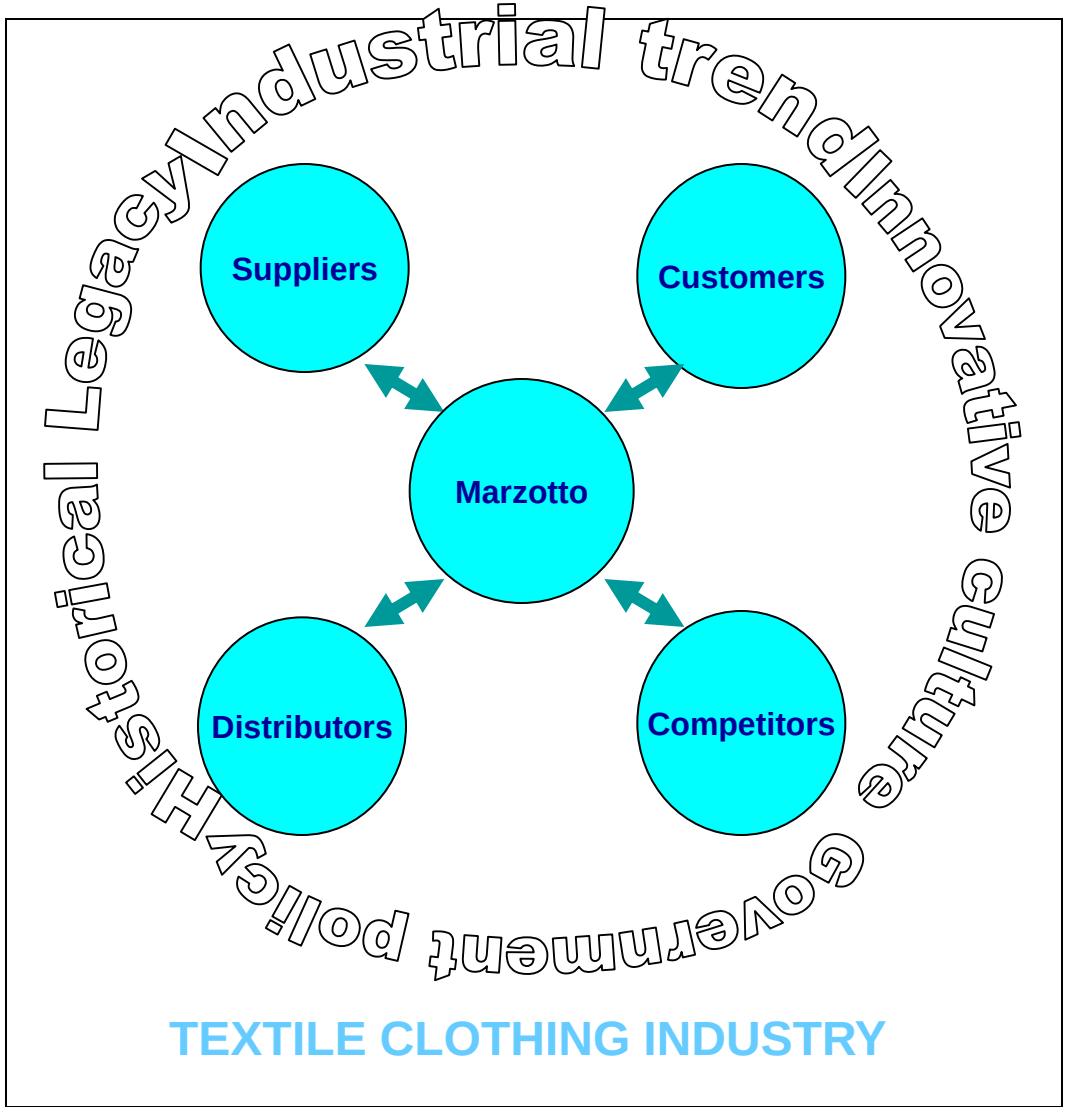

16
14
12
10
8
6
4
2
0
Printing components
Textile treatment
Sport/outdoor
Procedures & devices
Grass
Composites
Plastics
Textiles
Advanced textiles
1923
1967
1972
1977
1982
1987
1992
1997
2002
2007

DISCUSSION

Industrial maturity

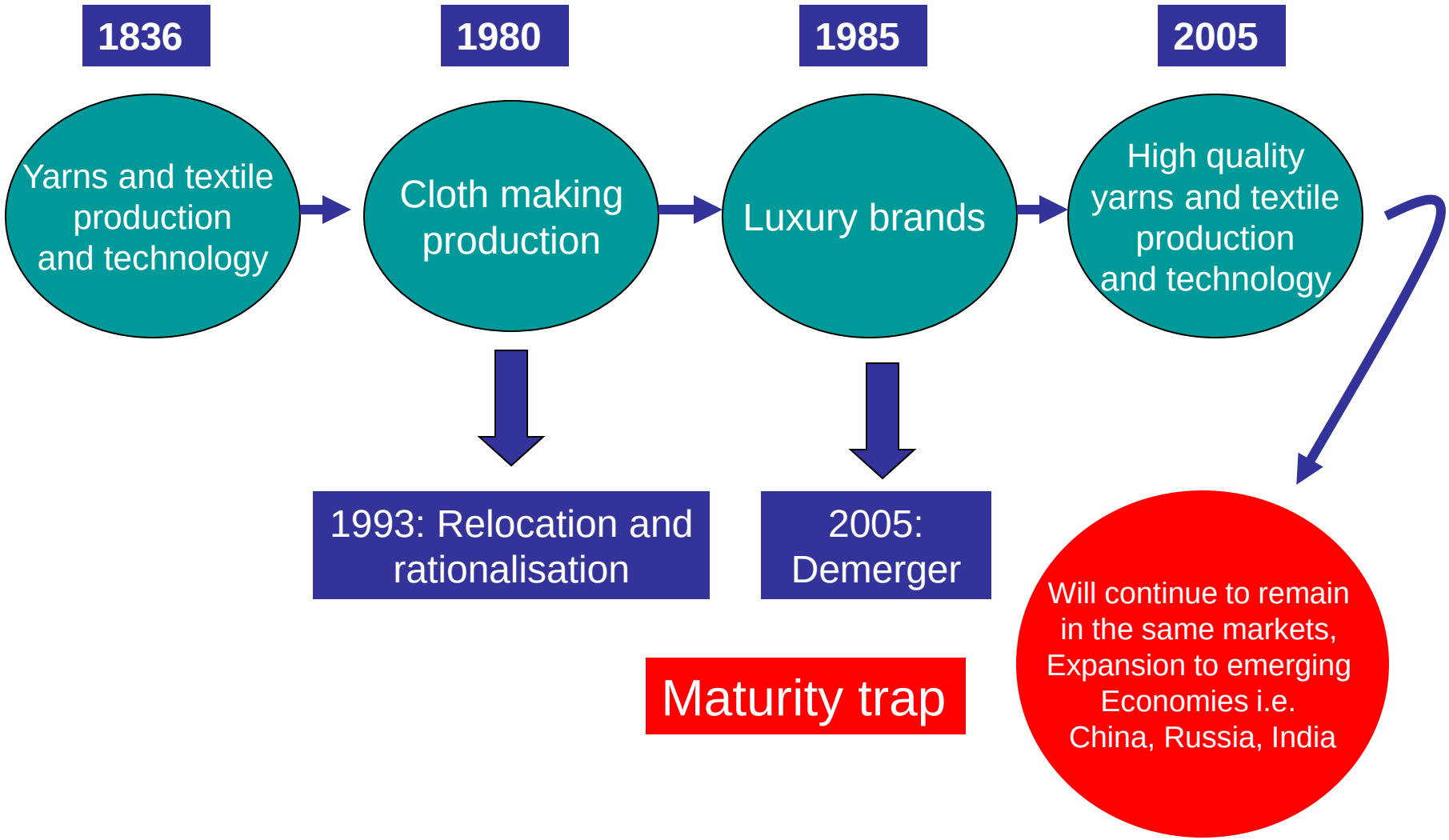
- In terms of process technology, maturity began in the late 19th century
- Industrial maturity occurs in different periods in two countries
- Process towards maturity in two different countries appears to follow different evolutionary paths:
  - Different primary markets
  - Different industry structures
  - Different competitive environment
  - Different opportunities
  - Different trade policies (liberal and protectionism)
  - Different historical background

Maturity-trap



- Active inertia
- Local search & local preferences
- Process innovation by adopting the latest equipment
- Existing markets
- Acquisitions to expand capacity and customer base
- A rather static competence

Marzotto-competence statics



De-maturity

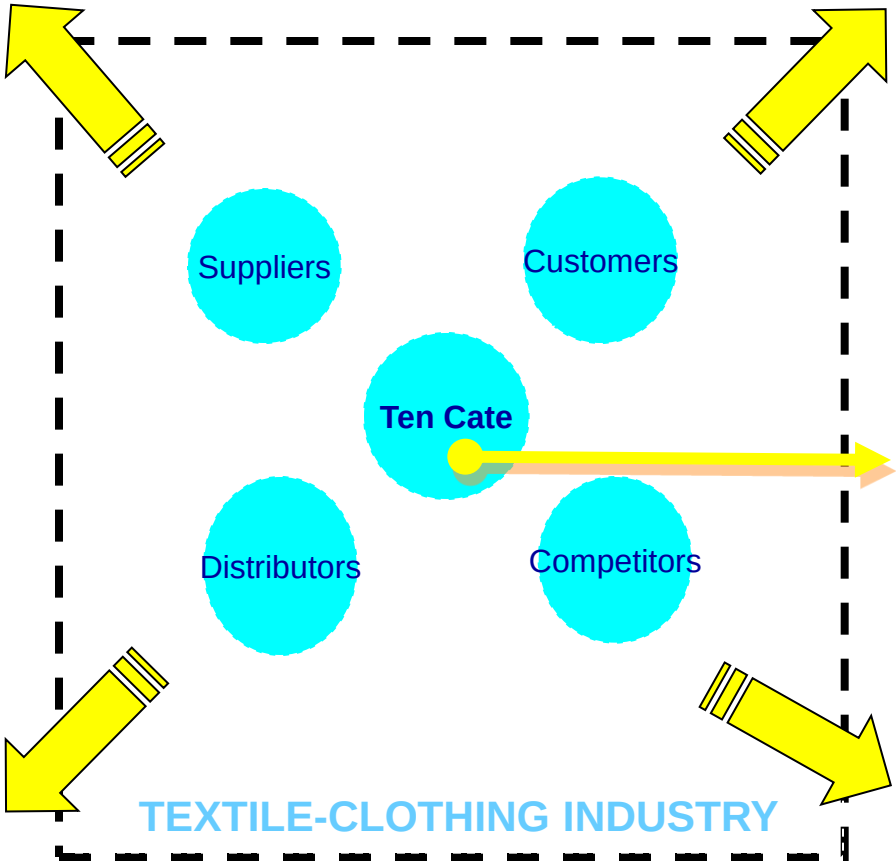
New materials

- Synthetic fibres
- High performance fiibres
- Composites
- Advanced, nano materials
- Advanced chemicals

Emerging processing technology

- Non woven
- Functional digital printing

New Distributors



Emerging markets

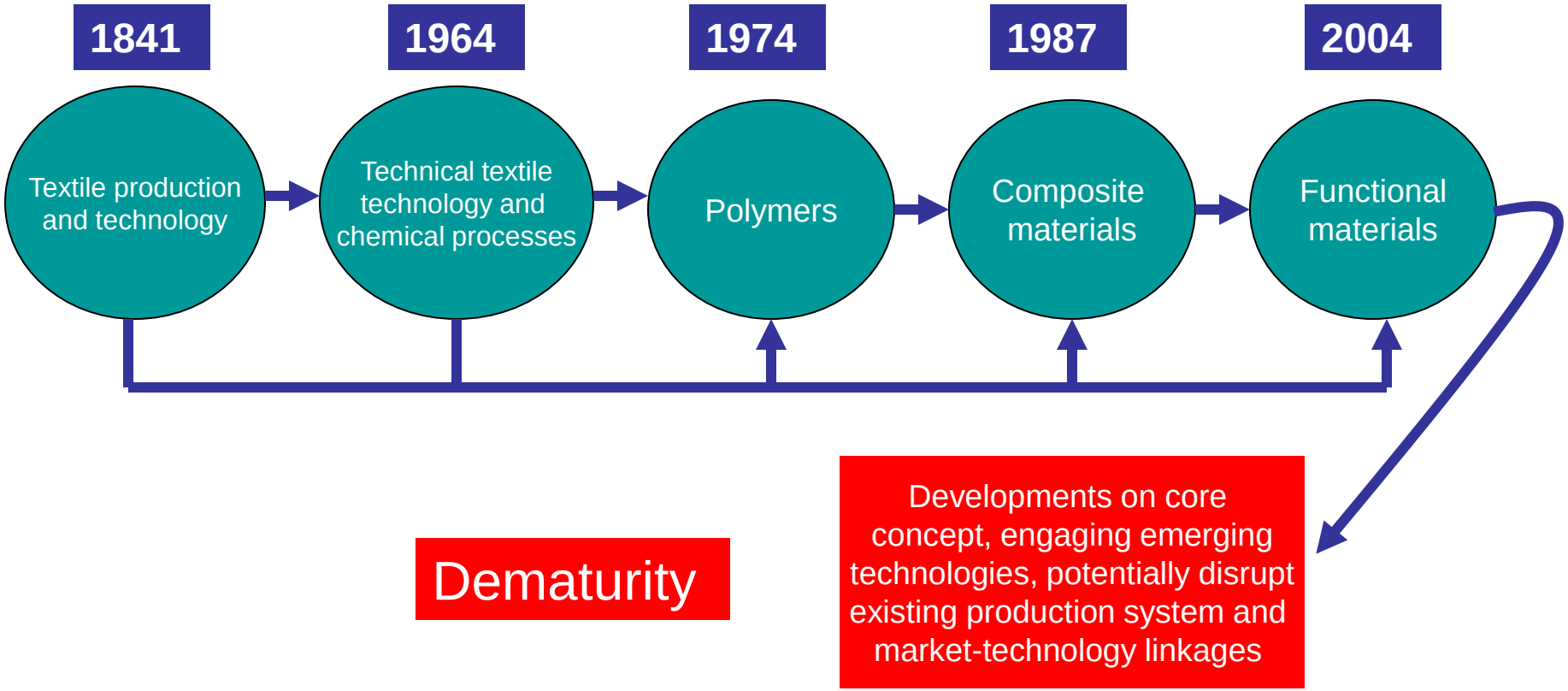
- Protective clothing
- Geotextiles
- Technical components
- Armour
- Artificial grass

Entrepreneurial, dynamic capabilities

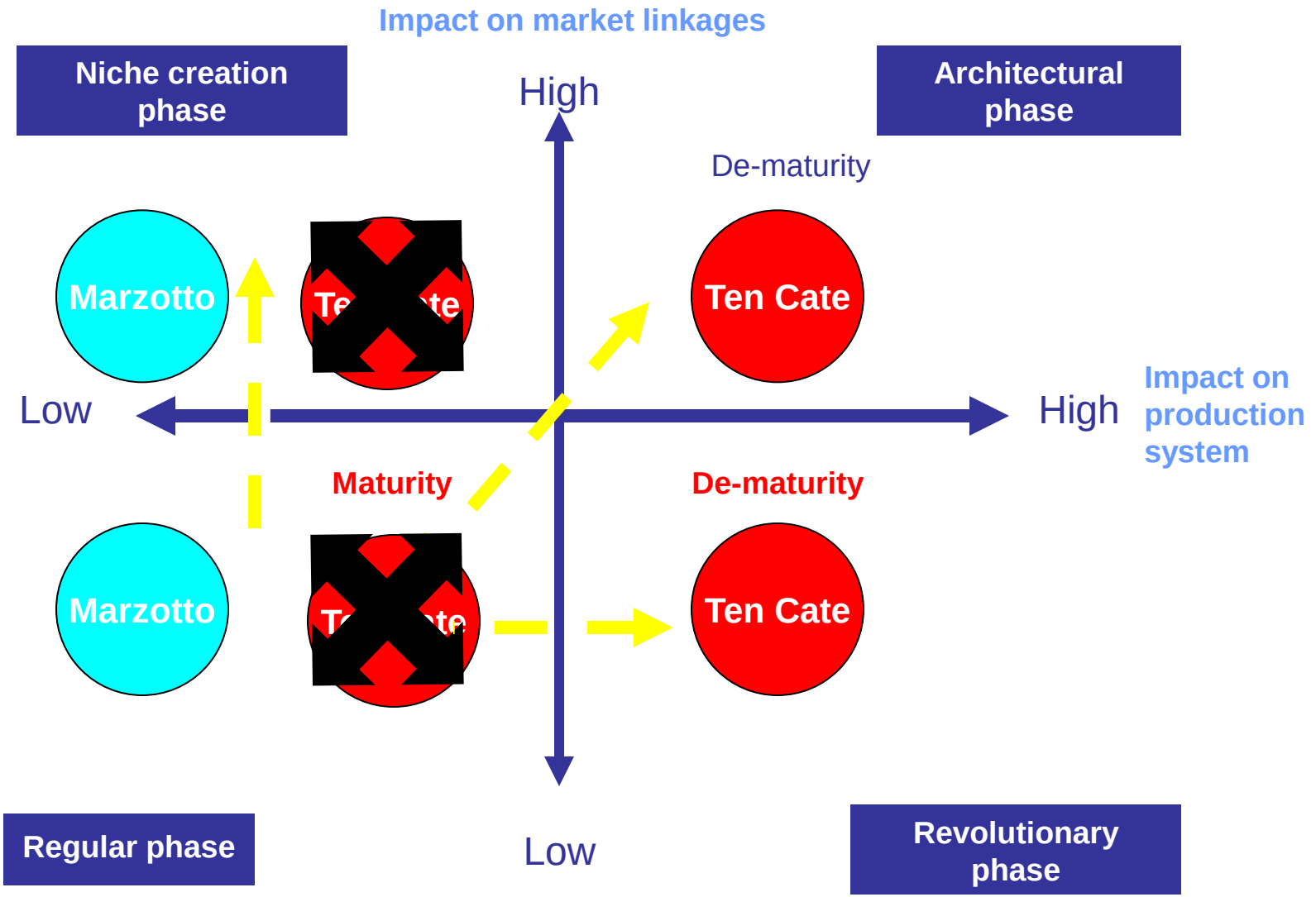
New Competitors

Creating new industrial boundaries

Ten Cate-competence dynamics



Evolution of Technology Transilience



CONCLUSION

- The EU efforts to **de-mature the textile industry** through **technological innovation** by supporting revolutionary R&D programmes should be accompanied by social innovation
- Combination of the two types of innovation are fundamental to break away from maturity-trap
- Advances in the textile industry have to be **complemented** by advances in supplier industries and market industries
- Firms have to develop dynamic capabilities that are fundamentally entrepreneurial in the process de-maturity
  - Distant search; international networks
  - Path breaking changes & continuous strategic allignment
  - Recombination of assets & cospecialisation
  - Constant change, innovation as a moving target